ABSTRACT

Aim:

To compare the effectiveness of hydrophobic and hydrophilic pit and fissure sealant retention among 7-10 year old school children.

OBJECTIVES:

1. To identify early caries lesions using International Caries Detection and Assessment System criteria (ICDAS II, 2005) among the study population.
2. To compare the effect of sealant retention after using hydrophobic and hydrophilic pit and fissure sealants placed on permanent mandibular first molars among 7-10 year old children at 3rd month and 6th month using United States Public Health Service - Modified Ryge Criteria for Direct Clinical Evaluation of Restorations proposed by Cvar and Ryge, 1980.
3. To evaluate and compare additional factors such as colour match, marginal discolouration, secondary caries, anatomic form, marginal adaptation and surface texture of hydrophobic and hydrophilic pit and fissure sealants placed on permanent mandibular first molars among 7-10 year old children at 3rd month and 6th month using United States Public Health Service - Modified

Ryge Criteria for Direct Clinical Evaluation of Restorations proposed by Cvar and Ryge, 1980.

Methodology:

The present split mouth randomized trial was conducted on the occlusal surfaces of permanent first mandibular molars of 7-10 year old school going children to compare and assess the retention along with other outcome variables like colour match, marginal discolouration, marginal adaptation, anatomic form, post-operative sensitivity, caries formation and surface roughness properties of two pit and fissure sealants, hydrophobic pit and fissure sealant (Intervention A) and hydrophilic pit and fissure (Intervention B). The study was conducted in Government Middle School, Padalam and The Hindu Carnation School, Madurantagam at Kanchipuram district over a period of 6 months.Clinical procedure was carried out on each subject by placement of one of the interventions on the right mandibular molar on the first day and the other intervention was placed on the left side of mandibular teeth on subsequent day. A total of 100 interventions, 2 for each patient, on the left and right side were placed. It took 10 days to complete this procedure with 10 interventions placed on each day and the time taken to place intervention was around 20 minutes per participant. All the children were instructed individually regarding the oral

hygiene practices to be followed during the study period. The interventions were assessed for retention primarily and other criteria like colour match, marginal discolouration, marginal adaptation, anatomic form, caries formation, post-operative sensitivity and surface roughness at the end of the third and sixth months using United States Public Health Service (USPHS) criteria. The data was compiled and analyzed using SPSS software and results were generated.

Results:

In the present study among the 50 restorations in the hydrophobic pit and fissure sealants (Helioseal®),48(96%) restorations were retained at the end of third month and 45(90%) were retained at the end of sixth month. Among the 50 restorations in the hydrophilic pit and fissure sealants (Embrace® Wetbond), 49(98%) restorations were retained at the end of third month, and 46(92%) at the end of sixth month were retained. There was no significant difference in the number of completely retained restorations at the end of six months (P = 1.000) among both the groups. The assessment of all the other outcome variables,like colour match, marginal discolouration, marginal adaptation, anatomic formand surface roughness between both the interventions showed that the differencewas not statistically significant. At the end of six months, the results showed that there was no caries progression in any of the intervention.

Conclusion:

The study results conclude that the new moisture tolerant hydrophilic pit and fissure sealants (Embrace® Wetbond) was comparable to the conventional hydrophobic pit and fissure sealants (Helioseal®) in terms of retention, colour match, marginal discolouration, marginal adaptation, anatomic form and surface roughness properties. Hence, it can be concluded that hydrophilic (intervention B) sealant may be used as effective pit and fissure sealants especially in children with high risk of caries, excessive salivation, differentially abled, very young children, uncooperative child and partially erupted molars.

Key words: Pit and fissure sealants, hydrophobic sealant, hydrophilic sealant, moisture tolerant, 7-10 years, school children, mandibular teeth.